Industrial Interoperability

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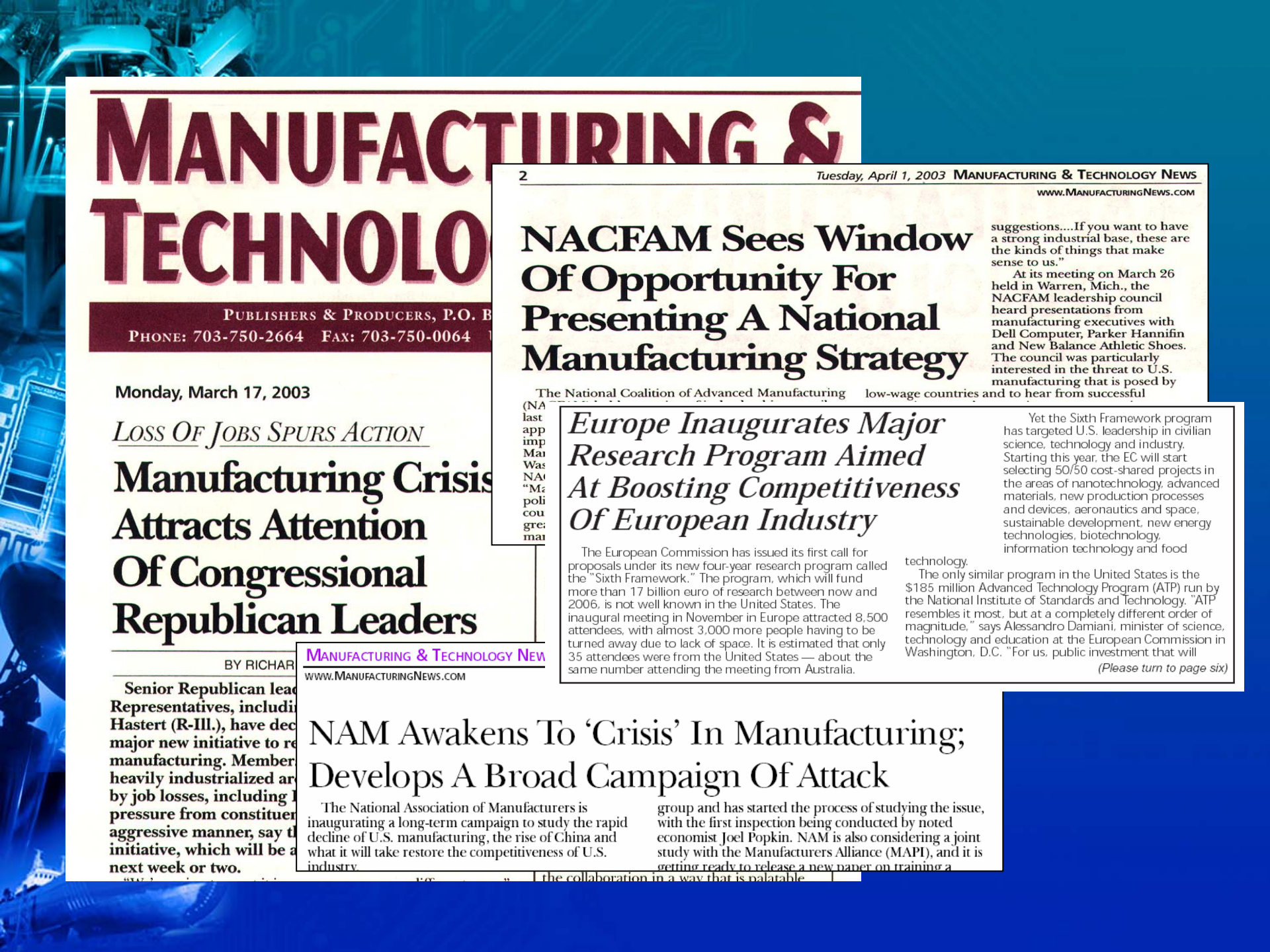
NIST National Institute of Standards and Technology • Technology Administration • U.S. Department of Commerce



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LOSS OF JOBS SPURS ACTION

Manufacturing Crisis Attracts Attention Of Congressional Republican Leaders

BY RICHAR

Senior Republican lead Representatives, includi Hastert (R-Ill.), have dec major new initiative to re manufacturing. Member heavily industrialized ar by job losses, including pressure from constituer aggressive manner, say t initiative, which will be a next week or two.

NACFAM Sees Window Of Opportunity For Presenting A National Manufacturing Strategy

The National Coalition of Advanced Manufacturing (NA last app imp Ma Was NA "Ma poli cou gre: ma

suggestions....If you want to have a strong industrial base, these are the kinds of things that make sense to us."

At its meeting on March 26 held in Warren, Mich., the NACFAM leadership council heard presentations from manufacturing executives with Dell Computer, Parker Hannifin and New Balance Athletic Shoes. The council was particularly interested in the threat to U.S. manufacturing that is posed by low-wage countries and to hear from successful

Europe Inaugurates Major Research Program Aimed At Boosting Competitiveness Of European Industry

The European Commission has issued its first call for proposals under its new four-year research program called the "Sixth Framework." The program, which will fund more than 17 billion euro of research between now and 2006, is not well known in the United States. The inaugural meeting in November in Europe attracted 8,500 attendees, with almost 3,000 more people having to be turned away due to lack of space. It is estimated that only 35 attendees were from the United States — about the same number attending the meeting from Australia.

Yet the Sixth Framework program has targeted U.S. leadership in civilian science, technology and industry. Starting this year, the EC will start selecting 50/50 cost-shared projects in the areas of nanotechnology, advanced materials, new production processes and devices, aeronautics and space, sustainable development, new energy technologies, biotechnology, information technology and food technology.

The only similar program in the United States is the $185 million Advanced Technology Program (ATP) run by the National Institute of Standards and Technology. "ATP resembles it most, but at a completely different order of magnitude," says Alessandro Damiani, minister of science, technology and education at the European Commission in Washington, D.C. "For us, public investment that will

(Please turn to page six)

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NAM Awakens To 'Crisis' In Manufacturing; Develops A Broad Campaign Of Attack

The National Association of Manufacturers is inaugurating a long-term campaign to study the rapid decline of U.S. manufacturing, the rise of China and what it will take restore the competitiveness of U.S. industry.

group and has started the process of studying the issue, with the first inspection being conducted by noted economist Joel Popkin. NAM is also considering a joint study with the Manufacturers Alliance (MAPI), and it is getting ready to release a new paper on training a

the collaboration in a way that is palatable

Major Points

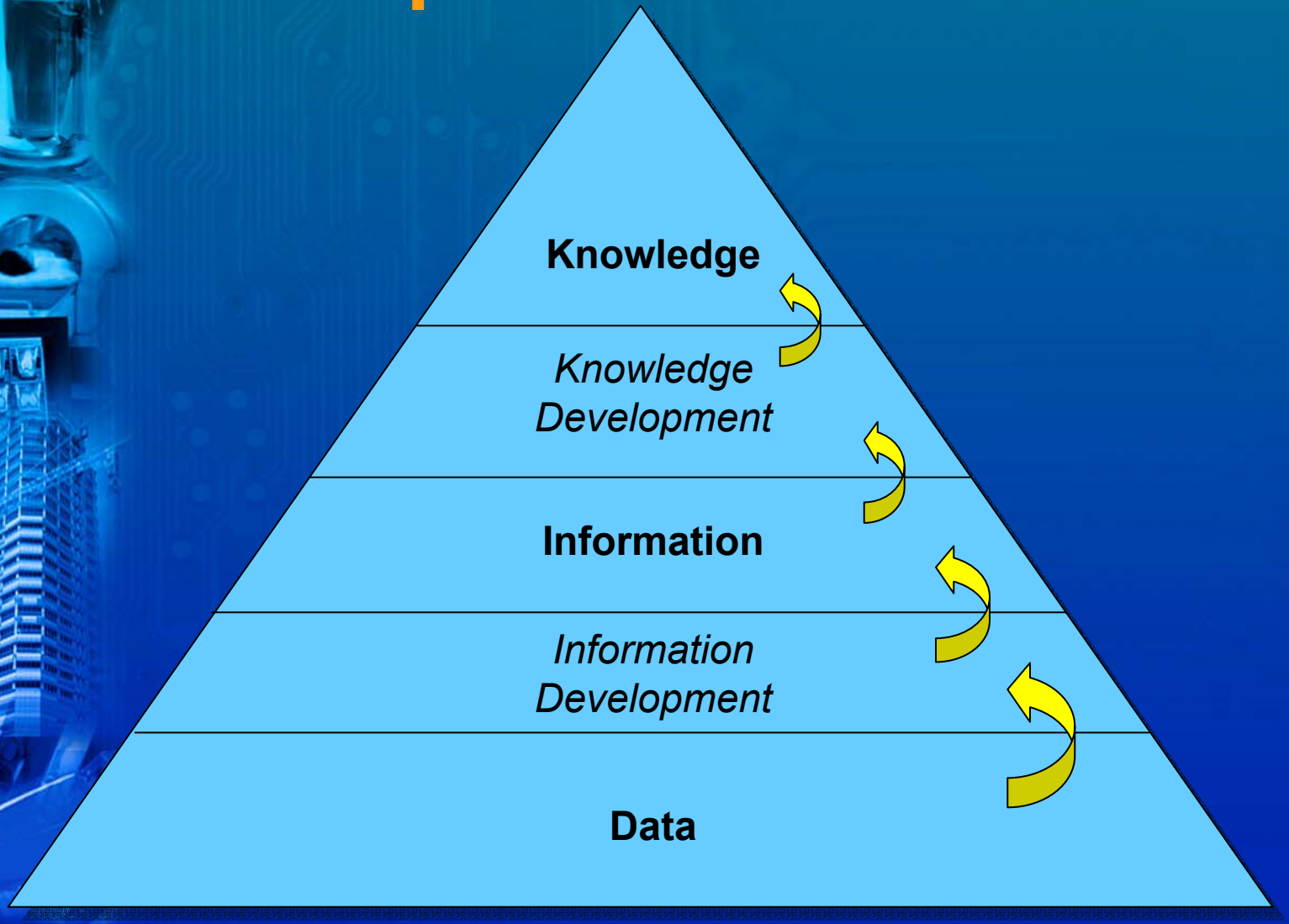
- National industrial complex emerging
- Inadequate Interoperability a major problem
- Common open standards are best solution
- Government has an important role
- NIST is the right agency
- Impacts are potentially large and widespread

Outline

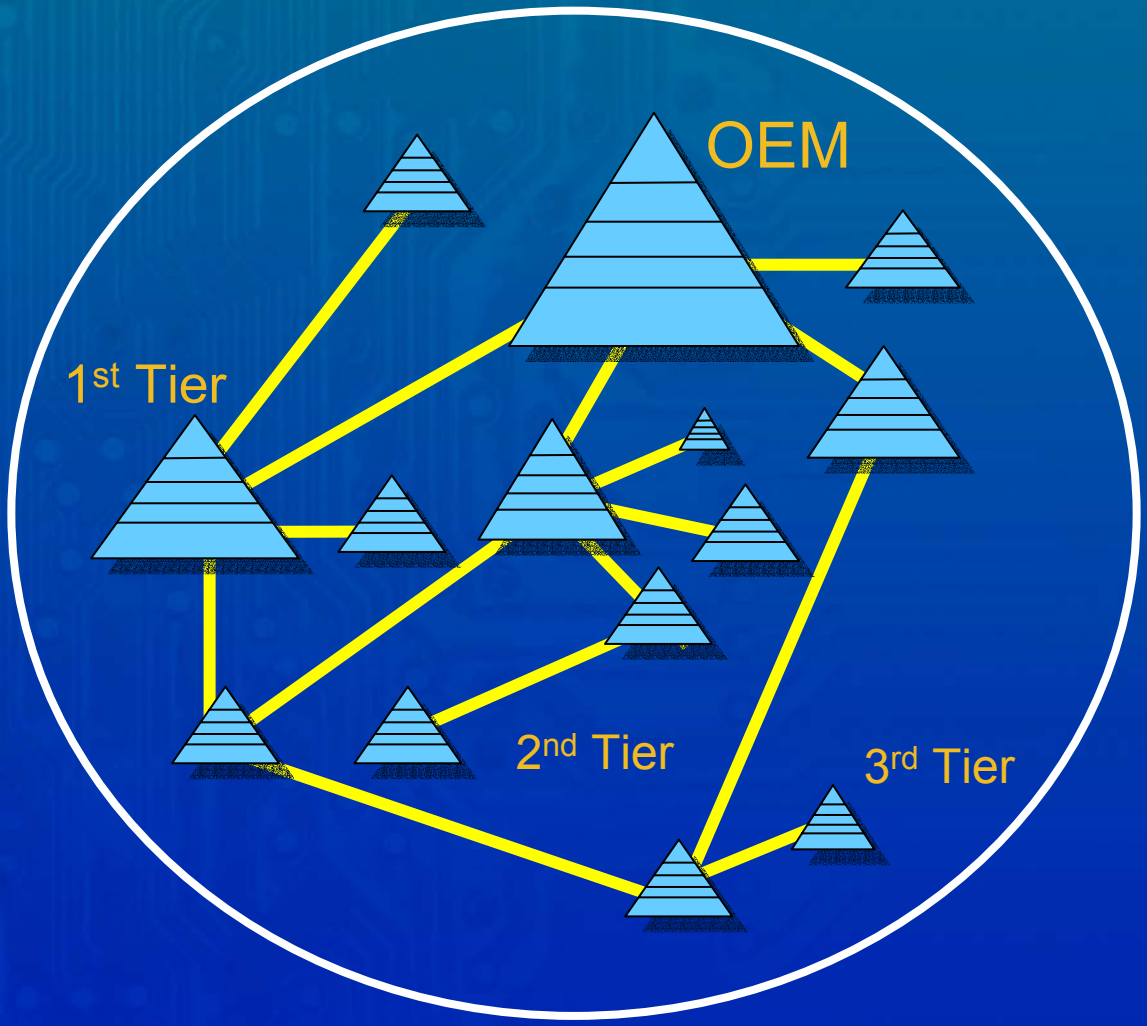
- Industry Need
- Government's role
- NIST's approach
- Potential impact
- Final words

Industry Need

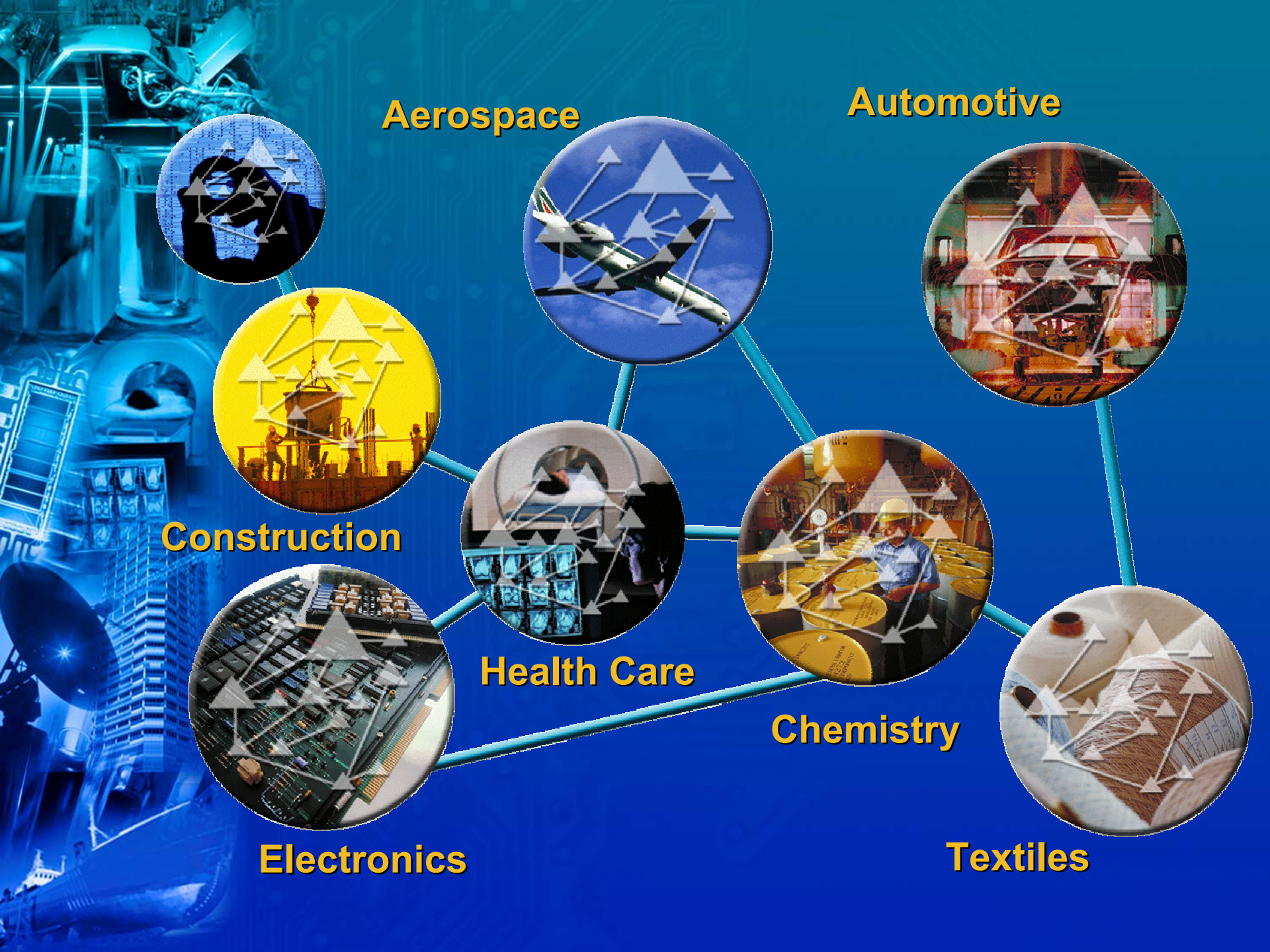
Interoperability: One Enterprise



Interoperability: Supply Chain

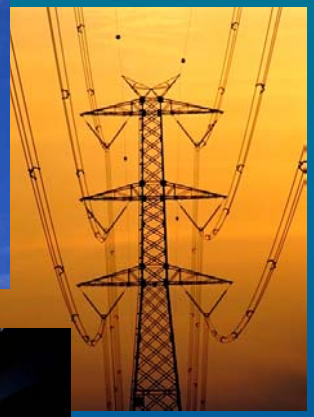


Inverted Cost Structure


Aerospace
Automotive
Construction
Health Care
Chemistry
Electronics
Textiles

Observations

- Structural
  - A new national industrial complex is emerging
  - Relies on the nation's critical infrastructure
- Security
  - A targeted attack can have a large ripple effect
  - Alternative paths can minimize that effect
- Economic
  - OEMs can no longer dictate solutions
  - SMEs in even greater danger



Critical Industry IT Needs

- Structural - transfer data, information and knowledge throughout the complex
- Security - make the infrastructure more robust
- Economic - make the cost of playing affordable

Improved interoperability meets these needs

Keys to Successful Interoperability

- Open consensus standards
- Quantifiable test methods
- Conformant commercial products
- National delivery mechanism

Government Has Critical Role

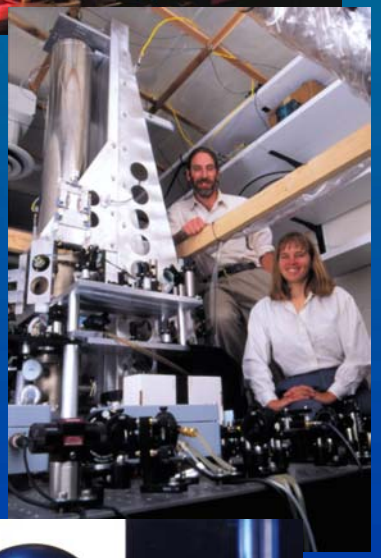
Why?

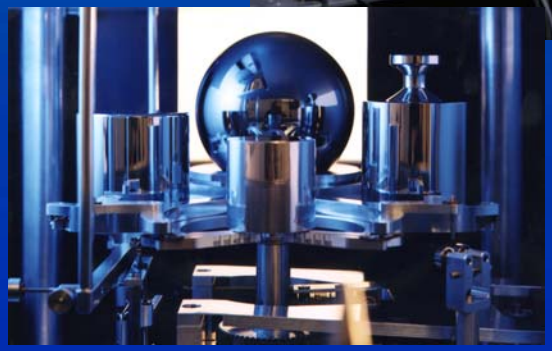
- Part of national infrastructure linking all sectors
- Beyond the scope of any single company
- Beyond the scope of any single sector
- Significant national economic implications
- Significant critical infrastructure implications
- Foreign governments funding own solutions

NIST is the Right Agency

Why?

- Standards and measurements are NIST's mission
- NIST is a trusted, neutral partner
- NIST has excellent track record
- NIST plays in the international arena
- MEP is a proven delivery vehicle to SMEs
- Enterprise Integration Act



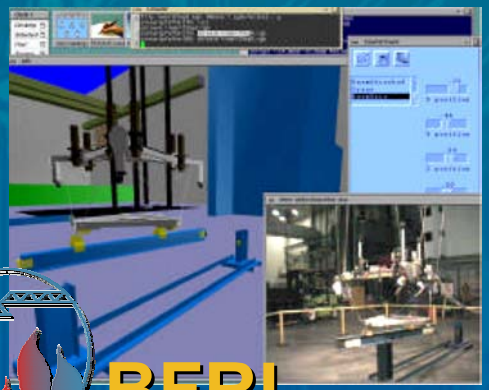


Industry Road Maps Recognize NIST

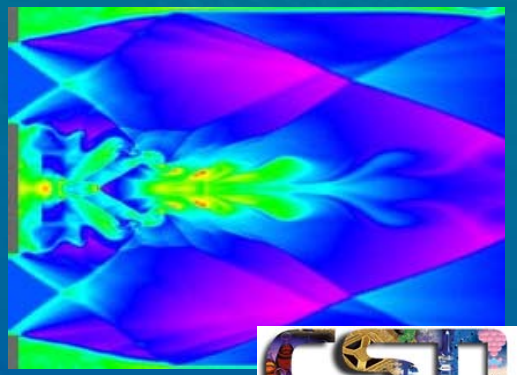
"Scaffolding the new Web: Standards and Standards Policy for the Digital Economy" by the RAND Corporation

Role for NIST:

- Focus on the development of public infrastructure
- Demonstrate technology that may facilitate interoperability
- Develop new types of standards that are easy to implement
- Develop test methods and testbeds that help measure the quality and fitness of of these new standards
- Develop a road map for E-commerce and knowledge-organization standards



BFRL

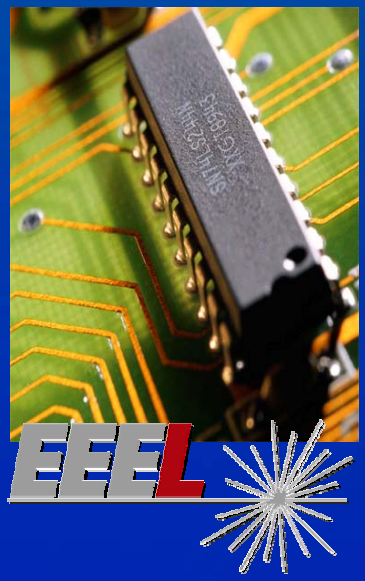


CSTL

NIST's Approach

MEL

iTL



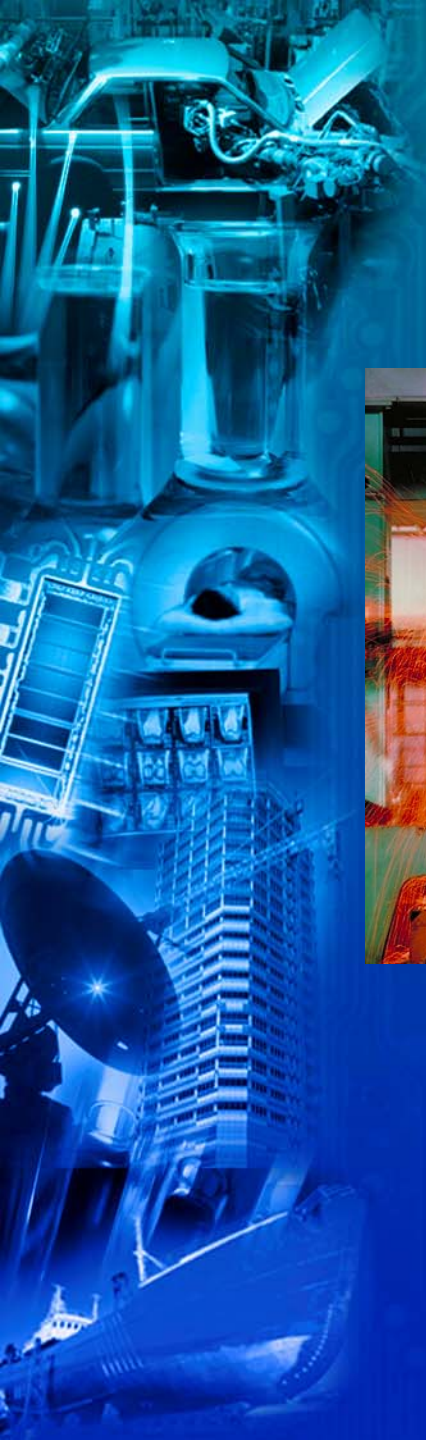
EEEL

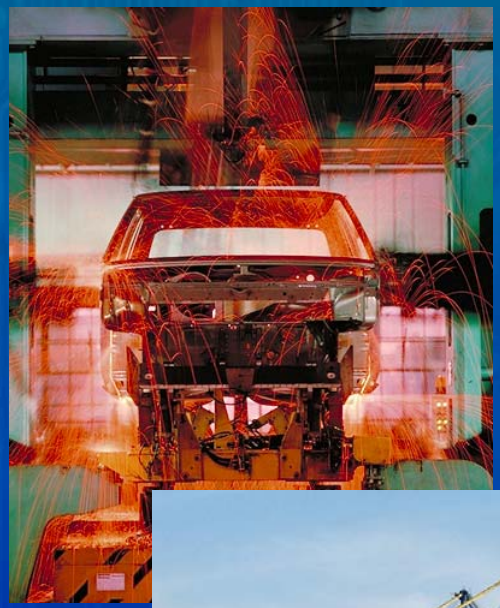
Strategic Approach

- Technical leadership and participation in standards development organizations
- Active collaboration with OEMs and SMEs in multiple industry sectors

Standards Development Organizations

Industry Sector Collaborators





Technical Approach

- Participate in various standards road maps
- Promote new types of standards and protocols
- Develop test methods and reference data sets
- Demonstrate benefits using pilot programs
- Speed deployment of solutions

Standards Road Maps

- ITL - XML-based Electronic Commerce Road Map for GSA
- MEL – Integrated Manufacturing Technology Initiative (IMTI) Technologies for Enterprise Integration
- EEEL – 2000 National Electronics Manufacturers Initiative (NEMI) Road Map
- BFRL – Fully Integrated and Automated TECHnology (FIATECH) Construction Integration Vision
- CSTL – Open Standards for Chemical Industry
- Data eXchange (CIDX)

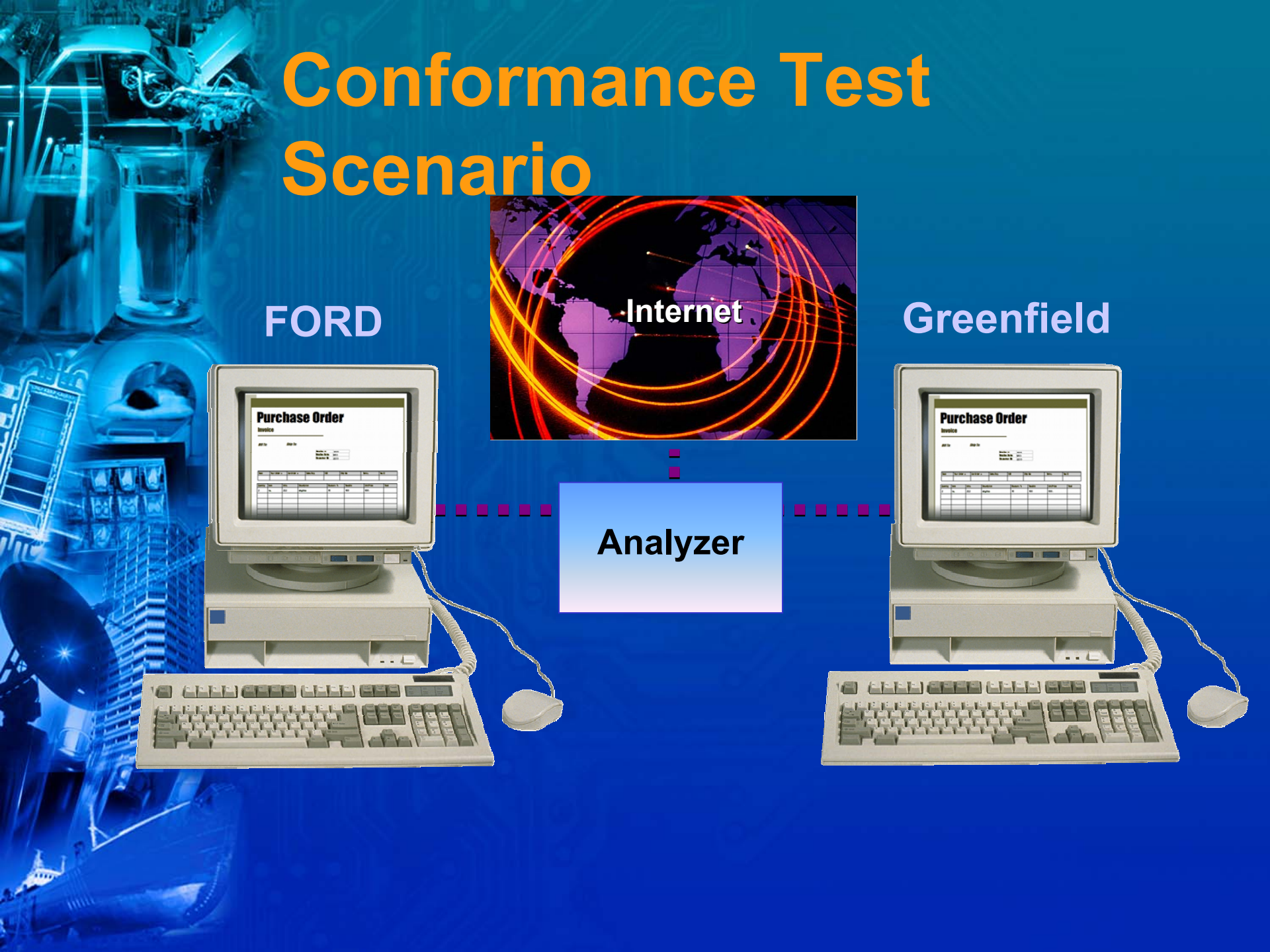
New Standards and Protocols

- Current generation
  - long development time; they're out-of-date when completed
  - human-language based; open to ambiguities
  - too many standards addressing the same issue
- Next generation
  - must address current limitations
  - compatible with evolving web technologies
  - generated by, consumed by, understood by computers
- Research agenda
  - base standards on mathematics/logic
  - develop languages to create standards
  - develop methods to promote sector reuse

Test Methods and Data Sets

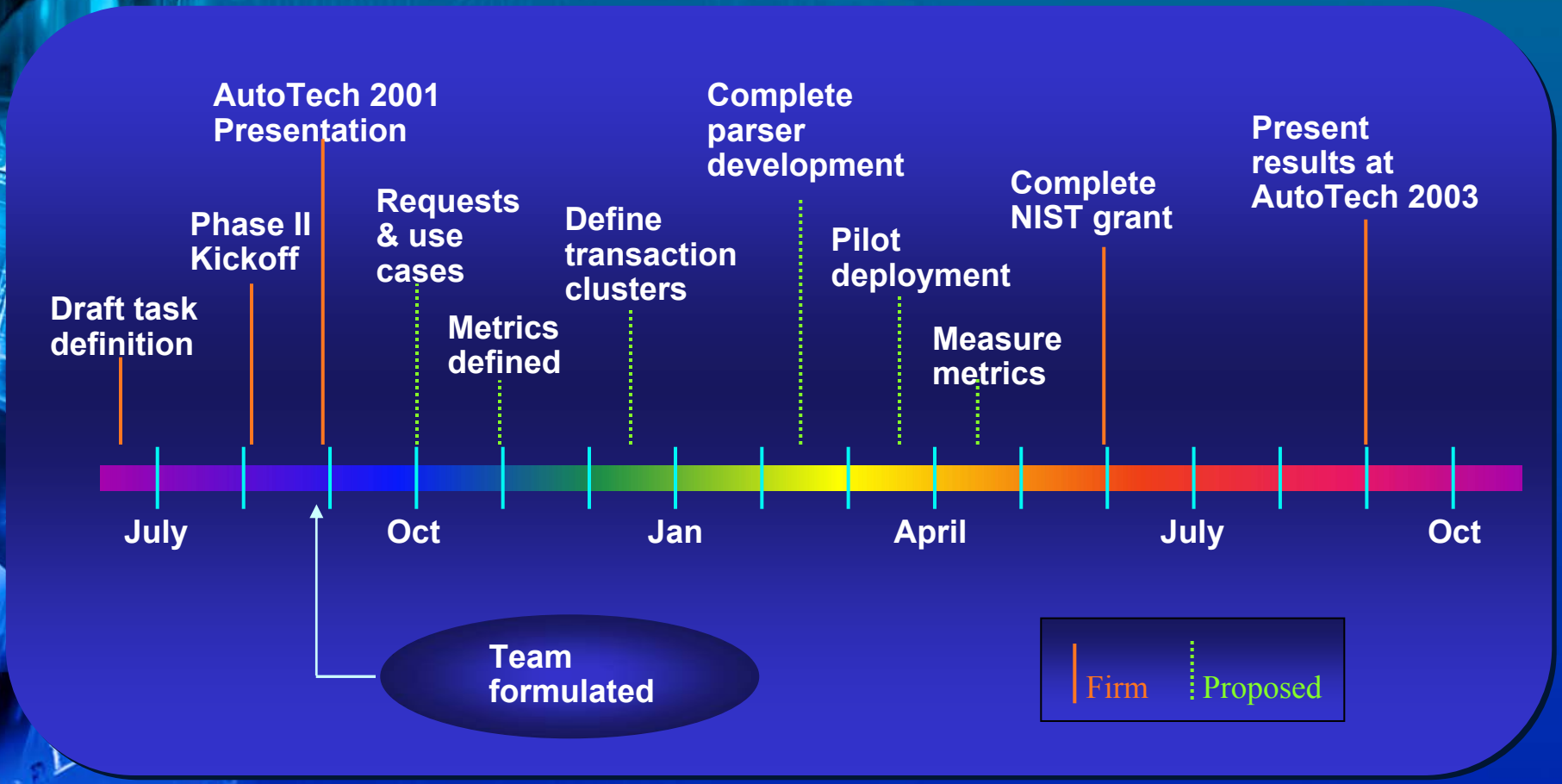
- NIST – OAG testbed for B2B interoperability
- NIST – AIAG testbed for product data management
- NIST – OASIS testbed for XML conformance
- NIST – OASIS testbed for ebXML conformance
- NIST – ISA testbed for control systems testing
- NIST – NEMI testbed for electronics component
- NIST – AEX testbed for equipment data exchange

Conformance Test Scenario



Pilot Programs

NIST-AIAG Example



Deployment

- Research
  - hastens development of open common standards
- Test methods and reference data sets
  - accelerate implementation of conformant products
- Pilots
  - increase user confidence that products work
- MEP
  - expedites dissemination of products to SMEs

Potential Impacts

Impacts from Improved Interoperability

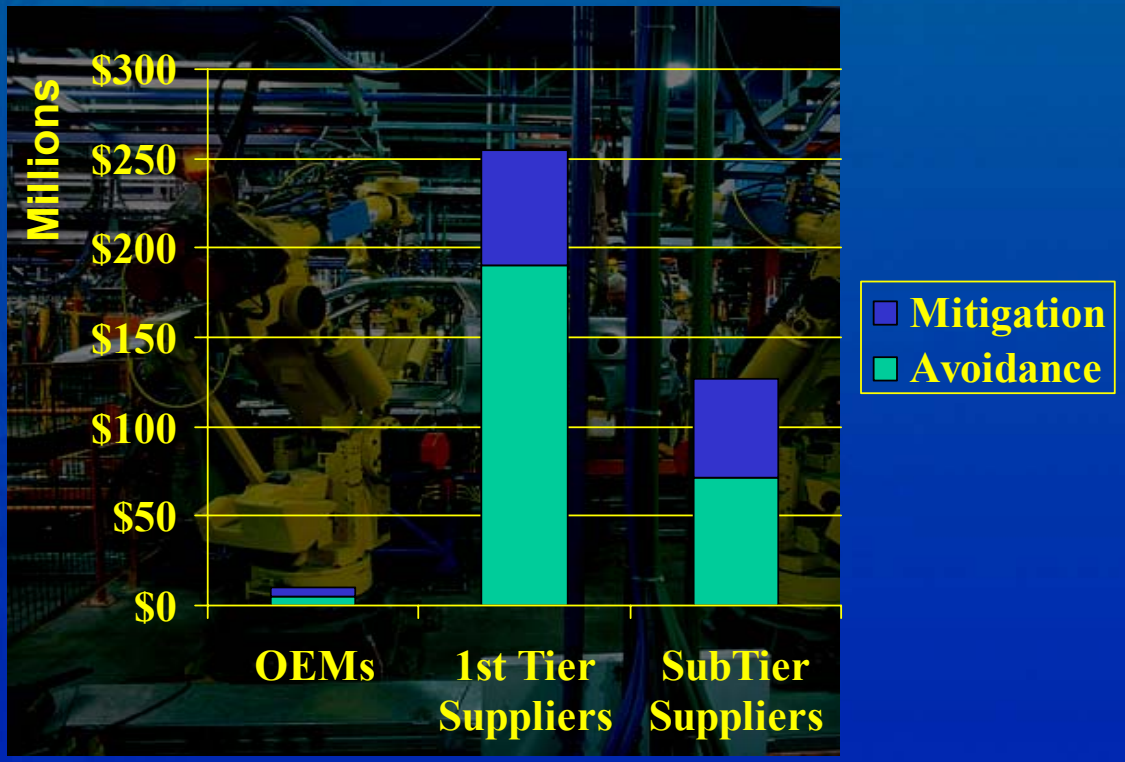
- Increases economic competitiveness
- Compresses time to market
- Reduces infrastructure vulnerability
- Expands markets for US companies
- Decreases supply chain integration costs
- Provides global access for software vendors

One Economic Impact: Product Data Exchange

- Estimated savings from adopting product data exchange standards

- Automotive industry ~$390M/year

- Transportation industry ~980M/year



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